GREATER VANCOUVER SEWERAGE & DRAINAGE DISTRICT

REVENUE & EXPENDITURE BUDGET

YEAR ENDING DECEMBER 31, 1989

MICHAEL J. O'CONNOR
COMMISSIONER

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

ESTABLISHED 1914

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TO: Administration Board

FROM: Executive Committee

RE: 1989 Final Budget

DATE: March 15, 1989

The Greater Vancouver Sewerage & Drainage District Final Budget for 1989 is presented for your consideration.

CHANGES FROM PROVISIONAL BUDGET

Sewerage & Drainage

Expenditure levels in Operations and Maintenance are unchanged from Provisional, although there has been a change in some of the specific projects planned for 1989.

Administration costs have increased due to the transfer of Property Services resources from capital projects.

The rising trend in interest rates has forced an increase in the budget for Debt Charges.

1989 Provisional Budget		$37,045,485
Debt Charges		613,551
Administration & General - Property Services		78,200
Operations & Maintenance		
Engine overhaul at Iona plant	$(52,000)	
Increased costs for N.W. Langley plant	23,700	
Removal of deposits in sewer lines	50,800	
Reduction in property taxes	(90,700)	
Increased labour at Iona plant	68,200	
		0
		$37,737,236

The total levies for GVS&DD facilities for 1988 and 1989 by municipality are given in Appendix "D".

Solid Waste Operations

The rate is unchanged from that set earlier in the year, although the budget for debt charges has been increased by $893,621 because of the rising trend in interest rates. This increase was offset by a greater surplus carried forward from 1988.

1989 FINAL BUDGET

Sewerage & Drainage

Operating Costs

Changes in the operating costs from the 1988 Final Budget are summarized as follows:

	ADMINISTRATION & GENERAL	OPERATIONS & MAINTENANCE	RESEARCH & DEVELOPMENT	RECYCLING	TOTAL
1988 Final Budget	$620,797	$14,154,878	$60,838	$158,172	$14,994,685
1988 Extraordinary Items		(664,309)			(664,309)
1989 Base Budget (before inflation)	620,797	13,490,569	60,838	158,172	14,330,376
1989 Extraordinary Items (Appendix A)	78,200	488,200			566,400
Change in Level of Service (Appendix B)		695,700			695,700
Increase in Base Budget (Appendix C)	124,900	82,900			207,800
Inflation	2,595	520,248	1,804	16,192	540,839
1989 Final Budget	$826,492	$15,277,617	$62,642	$174,364	$16,341,115

Debt Charges

Debt charges are projected to increase $196,271 over the 1988 Final Budget. Capital expenditures planned for 1989 total $5,205,000 and include the completion of the outfall in the Vancouver Sewerage Area, sewer rehabilitation work in the Surrey section of the Fraser Sewerage Area, and Liquid Waste Management studies.

Solid Waste

1989 operations include the first full year of operation of the incinerator and the start-up of the Cache Creek facility, resulting in substantial increases in operating costs and debt charges. Volumes are projected at 725,000 tonnes, an increase of 109,400 (17.8%) over 1988.

1988 ACTUAL

Sewerage & Drainage

Variance from 1988 Final Budget:

	Favourable/ (Unfavourable)
Debt Charges	$1,602,471
Administration & General	(161,678)
Operations & Maintenance	406,458
Research & Development	31,329
Recycling	(23,920)
Financing for members	53,887
	$1,908,547

Debt Charges

The 1988 Final Budget had been based on an average interest rate of 11% whereas the actual average was only 9.35%. As well, a large planned debenture issue was not made resulting in lower charges.

Administration & General

A portion of a lump sum payment made pursuant to union contract settlement and not included in the budget accounted for most of the variance.

Operations & Maintenance

The bulk of the favourable variance was in the Sewer Treatment Plants and was largely the result of resources being reallocated to capital works, and reduced fuel, gas and electrical consumption at the Iona plant. Delays in hiring staff for pumping stations, quality control and source control also contributed.

Partially offsetting these were emergency repairs to trunks and interceptors because of leaks and corrosion, and unanticipated complexities in the Iona Deep Sea Monitoring project.

Solid Waste

The volume received was 615,600 tonnes as opposed to a budget of 647,485. Steam sales were also under budget by $1,250,000, the result of lower than planned prices and volumes. However, the lower volumes also resulted in lower operating costs.

Appendix A

GREATER VANCOUVER SEWERAGE & DRAINAGE DISTRICT

1989 Extraordinary Items

ADMINISTRATION & GENERAL		
Increased work required of the Property Services Department		$ 78,200
OPERATIONS & MAINTENANCE		
Iona Island STP		
Replacement of moisture separators	$ 15,000	
Concrete restoration and repairs	20,000	
Expansion of Intake Air Filtration system	5,000	
Purchase of engine cylinder liners	45,000	
Sludge removal	60,000	
Replacement of mixer shafts	15,000	
Replacement of No. 2 Digester pipe	10,000	
Painting administration and maintenance buildings	16,000	
		$186,000
Annacis Island STP		
Overhaul cogeneration system	40,000	
Purchase of sedimentation tank chain	30,000	
Upgrade co-gen air filtration	8,000	
Purchase of spare impellor	5,000	
Sludge removal	103,200	
Modification to barscreen flushing	5,000	
Upgrade of boiler supply gas piping	8,000	
		199,200
Lulu Island STP		
Purchase of spare impellor	2,000	
Installation of housing around chlorinator	6,000	
Exchange of incinerator mercobowl	50,000	
		58,000
Lions Gate STP		
Housing for booster blower	5,000	
Painting No. 3 Digester	6,000	
		11,000
Pumping Stations		
Purchase of equipment to improve safety of electrical workers		4,000
Trunks and Interceptors		
Purchase of equipment to improve safety standards and quality of maintenance		30,000
		$488,200

Appendix B

GREATER VANCOUVER SEWERAGE & DRAINAGE DISTRICT

Change in Level of Service

OPERATIONS & MAINTENANCE

Sewerage Treatment Plants		
Increase in staff and related benefits required by need to control odours and cope with increased corrosion	$ 77,700	
Engineering staff required to implement new computerized maintenance program, to assist in cost evaluation of sewerage treatment plant performance, to provide expertise in environmental engineering, and to meet an increasing workload	113,900	
Upgrading of electrical drafting and records as a result of expansion and revisions at the four plants	68,300	
Labour costs to cover engine overhauls at Iona STP	33,500	
A permit requirement for operation of the Deep Sea Outfall at Iona was that a major oceanographic and engineering study be carried out to confirm dilution predictions. This project, complete in 1988, will not be repeated in 1989 although a decreased level of monitoring will continue	(115,000)	
Higher costs associated with the N.W. Langley STP	23,700	
		$202,100
Pumping Stations		
Maintenance supplies and electricity required for a new pumping station - Richmond East	$ 27,400	
Increase in staff (apprentice electrician) and related costs required to meet safety standards	52,200	
		79,600
Drainage Facilities		
Increasing drainage area inspections		22,800
Interceptors and Trunks		
Canadian National Railway's assessment for annual easement rentals for North Surrey interceptors	4,000	
Monitoring hydrogen sulphide levels	64,300	
Increase in staff (sewer regular) and related costs for maintenance of additional trunk sewers	43,000	
Programs to remove the deposition of solids in the sewer lines	50,800	
		162,100
Source Control		
Source control by-law implemenetation and administration		229,100
		$695,700

Appendix C

GREATER VANCOUVER SEWERAGE & DRAINAGE DISTRICT

Increase in Base Budget

ADMINISTRATION & GENERAL

Increase in general administrative services allocation	$ 76,500	
Increase in administrative offices allocation	62,300	
Decrease in central administrative services allocation	(4,000)	
Decrease in miscellaneous general expenses	(2,970)	
Decrease in legal fees	(6,930)	
		$124,900

OPERATIONS & MAINTENANCE

Source Control		
Merit/Reclassification Increases	$ 4,200	
Annualization of 1988 staff additions	1,900	
Allocated central cost centres	3,800	
Transfer of indirect costs from GVS&DD/GVWD, re reorganization of Pollution/Quality Control	48,800	
		$ 58,700
Operations		
Allocated costs	6,300	
Decrease in property taxes	(90,700)	
Maintenance and repairs to keep laboratories in good operating condition	9,900	
O&M Administration Labour	34,700	
Overtime required due to increased workloads	64,000	
		24,200
		$ 82,900

Appendix D

GREATER VANCOUVER SEWERAGE & DRAINAGE DISTRICT

Sewerage & Drainage Facilities
Comparison of 1989 levy to 1988
(excluding financing for members)

Municipality	1988 Levy	1989 Levy	% Increase (Decrease)
Burnaby	$ 4,337,924	$ 4,466,173	3.0
Coquitlam	1,516,190	1,626,539	7.3
Delta	1,574,293	1,656,155	5.2
Langley (City)	358,689	382,990	6.8
Langley (District)	659,338	709,885	7.7
Maple Ridge	1,340,629	1,268,673	(5.4)
New Westminster	1,135,574	1,190,834	4.9
North Vancouver (City)	682,656	676,483	(0.9)
North Vancouver (District)	1,050,113	1,056,350	0.6
Pitt Meadows	228,366	214,759	(6.0)
Port Coquitlam	531,980	576,059	8.3
Port Moody	387,168	440,778	13.8
Richmond	2,731,443	2,894,265	6.0
Surrey	3,289,674	3,566,411	8.4
U.E.L.	70,743	66,105	(6.6)
Vancouver	12,777,738	12,271,659	(4.0)
West Vancouver	913,582	937,732	2.6
White Rock	278,610	297,653	6.8
	$33,864,710	$34,299,503	1.3

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Revenue and Expenditure Budget
Year Ending December 31, 1989

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GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Long-term and Ongoing Role

Liquid and solid waste disposal (i.e. sewage, drainage and solid waste) is carried out by the Sewerage and Drainage District pursuant to the Greater Vancouver Sewerage and Drainage District Act. Membership in this District by municipalities is voluntary; however, once in, there is no provision for opting out. The District is legally obliged to perform in accordance with the Act.

1. Sewage - This program involves the collection, treatment and disposal of sewage from member municipalities in accordance with the 1953 Rawn Engineering Report and subsequent amendments. The collection and disposal is accomplished through a system of trunk and intercepting sewers, pump stations and a treatment plant in each of four Sewerage Areas which cover the entire District.

2. Drainage - This program involves the maintenance and improvement of drainage channels that traverse more than one municipality and that have been designated major drainage facilities as requested by members and approved by the Administration Board. Major drainage facilities are located within established Drainage Areas (areas having a single disposal point).

3. Solid Waste - This program involves the disposal of solid wastes generated by member municipalities who have availed themselves of the District's services.

1989 Short-term Objectives for Sewerage and Drainage Programs

The long-term and ongoing role will be maintained in 1989 by the following short-term objectives. Some of the objectives are to be accomplished by capital projects, others by the operation and maintenance programs described.

A. General Objectives

1. To prepare a Liquid Waste Management Plan under the provisions of the Waste Management Act, to provide for the current and future requirements of the Region.

   The Plan will cover the collection, treatment and disposal of liquid wastes. Phase I of the studies and public participation is now virtually complete and presents information on existing waste discharges together with a set of realistic waste management options with costs. Phase II, which is expected to commence in 1989, would consist of the preparation of a fully developed plan and could take another 2-3 years to complete.

   Recommendations of the Phase I report include (a) developing a regional source control bylaw and increasing source control activities; (b) an environmental monitoring program to determine the impact and significance of wastewater discharges (in particular, Annacis Sewage Treatment Plant); (c) preliminary engineering studies of upgrading alternatives for Annacis Sewage Treatment Plant; (d) effluent dechlorination and alternate sludge disposal methods for Lions Gate STP; (e) joint studies of combined sewer overflows by the District and the Cities of Vancouver and New Westminster to determine the best methods of reducing the impact of sewage overflows to local waters; and (f) continuation and expansion of the public information program.

B. **Treatment Plant Objectives**

2. To reduce the impact of effluent discharges on the receiving environment by enlargement and improvement of the treatment plant facilities.

    . At the Annacis Island satellite pump station modify the Braid Street Gate raising system to avoid uncontrolled discharge of sewage through manholes during a possible power failure at the Sapperton Pumping Station.

    . At the Lulu Island Plant install a new barminutor to avoid bypassing sewage during a failure of one of the two existing barminutors. Flows have increased to the point that one barminutor is insufficient. Additional pumping capacity is also planned.

3. To control operation and maintenance costs by utilizing a computerized preventative maintenance program through acquisition of computers, programs, staff and staff training.

    . Computers will be installed successively at Lulu Island, Annacis Island, Iona Island and Lions Gate Sewage Treatment Plants. The computers' data will be accessible to terminals located in the Head Office. Full implementation of the project will extend into 1991.

4. To maintain structures, equipment and conduits through corrosion control programs.

    . Protective coatings will be applied on equipment at all four plants that has been damaged by corrosive gases.

    . Corroded mild steel equipment and piping will be replaced with aluminum or stainless steel at all four plants.

5. To replace equipment that has reached the end of its useful life.

    This equipment includes replacement of such items as diesel storage tanks at Iona, raw sewage pump impellers at Annacis and Lulu Island, the instrument air compressor and a chlorinator at Lions Gate.

6. Upgrading and maintenance of equipment and structures.

    Air filtration systems will be enlarged at Iona and Annacis. Some buildings and structures will be painted at Iona and Lions Gate. Major engine overhauls will be carried out at Iona and Annacis. A sludge centrifuge at Lulu Island will be overhauled. The grit handling and disposal system at Lions Gate will be overhauled and modified.

7. To minimize odor production and attendant corrosion problems.

    . At Annacis, chemical and operational costs will be incurred to operate wet-caustic, hydrogen sulfide scrubbing systems and further evaluate odor sources.

    . Temporary summer help will be employed at Iona, Annacis, Lions Gate and Lulu Island for intense cleaning programs during the summer months.

8. To minimize sludge disposal costs.

- The contents of No. 2 sludge lagoon at Annacis and part of the contents of the S.E. sludge lagoon at Iona will be removed for on-site drying.

- A study of suitable dewatering equipment will continue in 1989 to permit economical transportation of digested sludge from Lions Gate to a separate off-site facility.

- Investigations will continue in 1989 to investigate and report on practical processes for the conversion of sewage sludge to a fertilizer product.

Review of Prior Years' Objectives for Plants

Capital works to reduce the impact of effluent discharges on the receiving environment and enlarge plant facilities continued in 1988.

- Construction of the Effluent Pumping Station and the Deep Sea Outfall at Iona were completed and the system commenced operation on April 1, 1988. Fine tuning of the system will continue until June 1989.

- Construction of a third preaeration and sedimentation tank at Lulu Island was completed in September 1988.

A consulting engineer and new engineering staff have worked in 1988 on the selection of an appropriate computerized maintenance program and hardware. Implementation will commence in early 1989 continuing on into 1991.

At the Iona Plant all extraordinary cost items identified for 1988, plus sludge removal (carried over from 1987), were carried out. In addition, the following items were carried out.

- Upon completion of a new plant water supply line that was installed under the Capital Works Program, the original plant water supply line was repaired to provide an emergency water supply.

- The No. 2 plant inlet including the conduit and siphon running beneath the North Arm of the Fraser to the plant was repaired and coated as a result of corrosive attack.

At the Lions Gate Plant all of the identified extraordinary cost items were carried out including the reconstruction of the Administration Building exterior (carried over from 1987).

At Annacis Island all identified extraordinary cost items were carried out. In addition, the following was carried out.

- The wet caustic scrubber system so dramatically reduced hydrogen sulfide from air that a second system was installed at the Plant inlet works in 1988. Work will continue on system tuning and odor evaluation in 1989.

At Lulu Island all the identified extraordinary cost items were carried out. In addition, the following was carried out.

. On February 1, 1988, an explosion, the result most likely of a fuel leak, substantially damaged the incinerator and associated equipment. Major repairs were carried out by Dillingham Construction and the unit returned to service on April 1, 1988. In addition to the major repairs, extensive modifications were carried out by District staff.

A. Sewer and Pump Station Objectives

1. To maintain the sewage transportation system in operation.

District crews will continue to carry out routine inspections and maintain the approximately 260 miles of large diameter sewers, the many flow-regulating structures and 34 pumping stations and forcemains.

The results of last year's program to control hydrogen sulphide attack in the larger sewers will be assessed and the program for rehabilitation of damaged sewers will be continued.

2. To reduce the risk of overflows due to system malfunction.

A program for timely replacement of old equipment will be upgraded. Existing equipment will be overhauled and at several pumping stations new equipment will be installed to increase capacity as the demands on the system increase.

The need for additional pumping capacity will be investigated at seven pumping stations and equipment installed where necessary. The need for emergency generators at eleven pumping stations will be investigated and equipment installed where necessary.

The level of maintenance will be improved by reorganization of maintenance crews and their area of responsibility. Two additional staff will be hired to operate and maintain the new pumping station in East Richmond and the additional sewers in the Langley area.

3. To carry out the District mandate to provide sewer service to new members and to keep pace with development.

In South Surrey sewer design will continue to extend service to the north slope. Construction will proceed as needed.

Two new sewer gauges will be installed and existing gauges will be upgraded where necessary to monitor flows in the system in order to identify undersized facilities and plan for their timely improvement. Efforts to locate areas of ground water intrusion into the sewers will continue and storm water separation will be stressed.

Work will also continue to locate and intercept any sanitary sewage discharges to receiving waters.

B. Drainage Objectives

1. To improve the operation and protection against flooding in the surface drainage courses administered by the District.

   Bank and channel repairs and improvements will be carried out as required in the various major drainage courses along with landscaping and general maintenance and brush cutting.

   In Port Moody and the north slope of Coquitlam the drainage study has been completed and the recommended first priority improvements to the system will be undertaken.

   Monitoring of peak flows in the major water courses will continue.

   Upgrading of rain gauges will continue with the installation of computer equipment to eliminate existing labour-intensive data processing.

Review of Prior Year's Objectives for Sewers, Pump Stations and Drainage

The sewage transportation system was maintained in operation without breakdowns, thus preventing significant overflows of untreated sewage.

Phase I of the Liquid Waste Management Plan was completed and incorporated within it is much of the work associated with combined sewer overflows which was originally planned as a separate study.

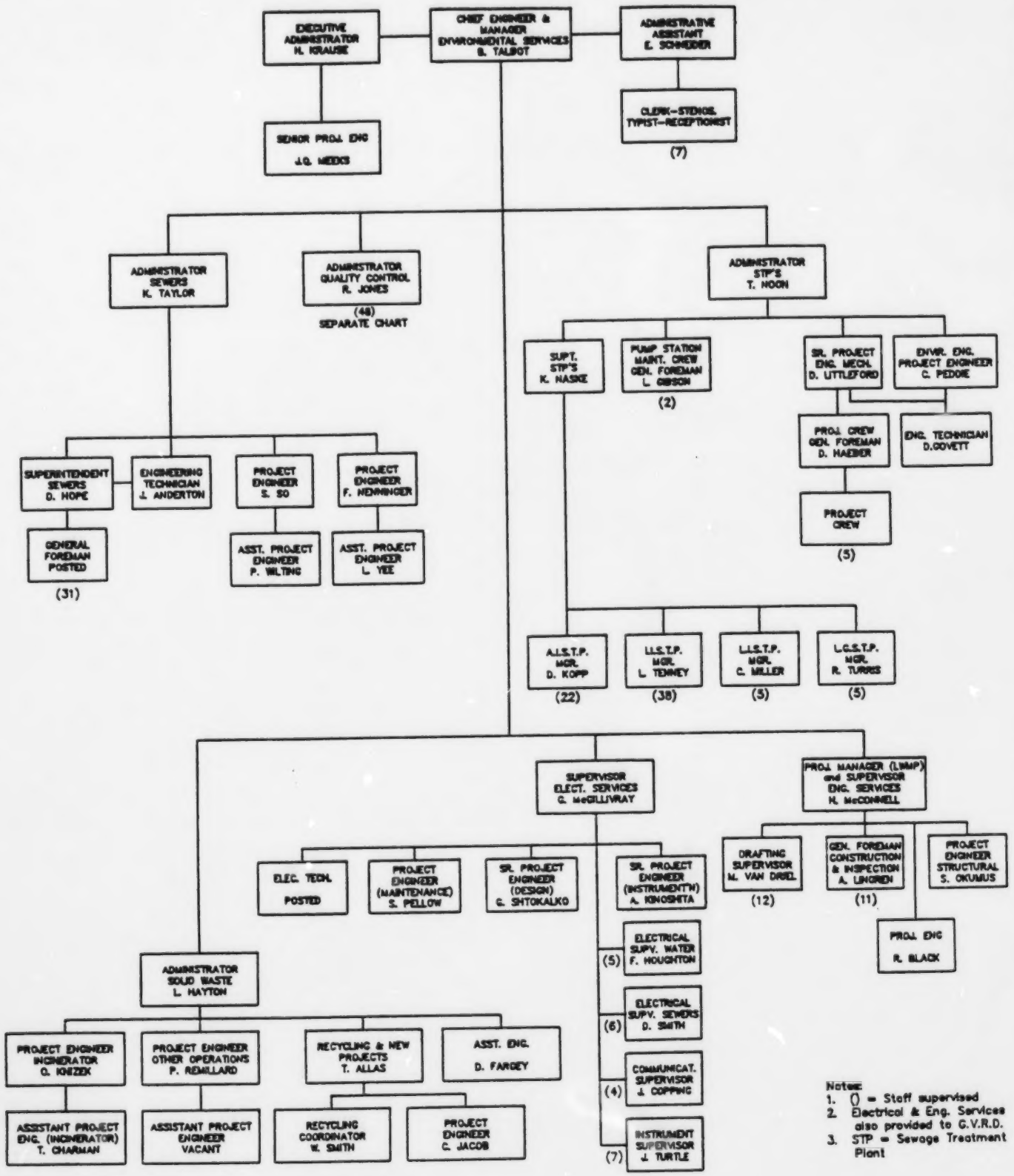
In Surrey, the Serpentine River Crossing was completed. This work is part of the continuing program to twin the existing sewers from South Surrey to the South Surrey Interceptor, to serve an increasing population.

Additional sewers and pumping station capacity was provided to meet increasing flows and to accommodate the Township of Langley. Cloverdale forcemain and Langley forcemain were twinned and Langley Pumping Station was upgraded. A new pumping station was installed in East Richmond to accommodate new development in that area.

The first stage of a program to repair damage to sewers caused by Hydrogen Sulphide was completed.

In New Westminster the Glenbrook Siphon was extended to McBride and Columbia Street to provide service to Woodlands School and a housing Development on the old Penitentiary site.

GREATER VANCOUVER SEWAGE AND DRAINAGE DISTRICT


EXECUTIVE ADMINISTRATOR H. KRAUSE
CHIEF ENGINEER & MANAGER ENVIRONMENTAL SERVICES B. TALBOT
ADMINISTRATIVE ASSISTANT E. SCHNEIDER
SENIOR PROJ. ENG J.Q. MEEKS
CLERK-STENOS. TYPIST-RECEPTIONIST (7)
ADMINISTRATOR SEWERS K. TAYLOR
ADMINISTRATOR QUALITY CONTROL R. JONES (48) SEPARATE CHART
ADMINISTRATOR STP'S T. NOON
SUPERINTENDENT SEWERS D. HOPE
ENGINEERING TECHNICIAN J. ANDERTON
PROJECT ENGINEER S. SO
PROJECT ENGINEER F. HENNINGER
GENERAL FOREMAN POSTED (31)
ASST. PROJECT ENGINEER P. WILTING
ASST. PROJECT ENGINEER L. YEE
SUPT. STP'S K. NASKE
PUMP STATION MAINT. CREW GEN. FOREMAN L. GIBSON (2)
SR. PROJECT ENG. MECH. D. LITTLEFORD
ENVR. ENG. PROJECT ENGINEER C. PEDDIE
PROJ. CREW GEN. FOREMAN D. HAEBER
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PROJECT CREW (5)
A.I.S.T.P. MGR. D. KOPP (22)
L.I.S.T.P. MGR. L. TENNEY (38)
L.I.S.T.P. MGR. C. MILLER (5)
L.G.S.T.P. MGR. R. TURRIS (5)
SUPERVISOR ELECT. SERVICES G. McGILLIVRAY
PROJ. MANAGER (LWMP) and SUPERVISOR ENG. SERVICES H. McCONNELL
ELEC. TECH. POSTED
PROJECT ENGINEER (MAINTENANCE) S. PELLOW
SR. PROJECT ENGINEER (DESIGN) G. SHTOKALKO
SR. PROJECT ENGINEER (INSTRUMENT'N) A. KINOSHITA
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ADMINISTRATOR SOLID WASTE L. HAYTON
PROJECT ENGINEER INCINERATOR O. KNIZEK
PROJECT ENGINEER OTHER OPERATIONS P. REMILLARD
RECYCLING & NEW PROJECTS T. ALLAS
ASST. ENG. D. FARGEY
ASSISTANT PROJECT ENG. (INCINERATOR) T. CHARMAN
ASSISTANT PROJECT ENGINEER VACANT
RECYCLING COORDINATOR W. SMITH
PROJECT ENGINEER C. JACOB

Notes:
1. () = Staff supervised
2. Electrical & Eng. Services also provided to G.V.R.D.
3. STP = Sewage Treatment Plant

FEBRUARY 20 1989

WA-1256

I hereby certify that the attached Schedule 1 is a true copy of the Levy for the Greater Vancouver Sewerage & Drainage District for the year ending December 31, 1989, as approved by its Administration Board at a meeting on March 22, 1989 and that the total amounts levied against each member municipality as shown herein, are due and payable on or before August 15, 1989.

M.J. O'Connor, Commissioner

Schedule 1

Schedule 1

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Revenue & Expenditure Budget
Levy for Debt Charges,
Administration and
Operation & Maintenance Expenses

Year Ending December 31, 1989

1988 Final Budget	1988 Actual		Requirements for the Year Ending December 31, 1989	% Change over 1988 Final Budget	(Underexpended) Overexpended in 1988	1989 Levy
		GVS&DD Facilities Sewerage & Drainage Debt Charges				
$19,672,777	$18,324,036	GVS&DD Debt Charges (Sch. 4)	$19,930,248	+ 1.3	$(1,348,741)	$18,581,507
(56,000)	(309,730)	Recovery - Interest earned less Sundry Financial Charges	(117,200)		(253,730)	(370,930)
19,616,777	18,014,306	TOTAL DEBT CHARGES	19,813,048	+ 1.0	(1,602,471)	18,210,577
620,797	782,475	Administration & General Expense (Sch. 6)	826,492	+33.1	161,678	988,170
14,154,878	13,748,420	Operation & Maintenance (Sch. 7)	15,277,617	+ 7.9	(406,458)	14,871,159
60,838	29,509	Research & Development	62,642	+ 3.0	(31,329)	31,313
34,453,290	32,574,710	Total Sewerage & Drainage	35,979,799	+ 4.4	(1,878,580)	34,101,219
158,172	182,092	Recycling Program	174,364	+10.2	23,920	198,284
34,611,462	32,756,802	Total GVS&DD facilities	36,154,163	+ 4.5	(1,854,660)	34,299,503
1,921,522	1,867,635	Financing for Members under Section 7(2) Debt Charges (Sch. 4)	1,583,073	-17.6	(53,887)	1,529,186
36,532,984	34,624,437		$37,737,236	+ 3.3	$(1,908,547)	$35,828,689
(771,738)	(771,738)	1987 underexpenditure carried forward				
	33,852,699					
$35,761,246	35,761,246	1988 Levy				
	$(1,908,547)	1988 Unexpended				

Burnaby	Coquitlam	Delta	Langley (City)	Langley (Dist.)	Maple Ridge	New West-minster	N. Van. City	N. Van. Dist.	Pitt Meadows	Port Coquitla
$2,461,186	$ 883,977	$ 906,406	$210,074	$386,278	$1,038,707	$ 767,557	$225,017	$ 351,865	$175,361	$316,11
(49,333)	(19,331)	(17,146)	(3,965)	(7,349)	(13,134)	(12,329)	(7,004)	(12,302)	(2,223)	(5,96
2,411,853	864,646	889,260	206,109	378,929	1,025,573	755,228	218,013	339,563	173,138	310,15
110,488	39,419	46,389	9,651	23,477	16,509	23,583	28,735	45,264	3,436	14,58
1,918,161	713,315	709,728	164,988	302,024	222,755	406,544	423,058	661,005	37,387	247,93
3,501	1,249	1,470	306	744	523	747	911	1,434	109	46
4,444,003	1,618,629	1,646,847	381,054	705,174	1,265,360	1,186,102	670,717	1,047,266	214,070	573,13
22,170	7,910	9,308	1,936	4,711	3,313	4,732	5,766	9,084	689	2,92
4,466,173	1,626,539	1,656,155	382,990	709,885	1,268,673	1,190,834	676,483	1,056,350	214,759	576,05
299,010	240,660							131,870		
$4,765,183	$1,867,199	$1,656,155	$382,990	$709,885	$1,268,673	$1,190,834	$676,483	$1,188,220	$214,759	$576,05

Schedule

est-ter	N. Van. City	N. Van. Dist.	Pitt Meadows	Port Coquitlam	Port Moody	Richmond	Surrey	U.E.L.	Vancouver	West Vancouver	White Rock
7,557	$225,017	$ 351,865	$175,361	$316,117	$230,320	$1,102,657	$1,956,178	$37,667	$6,995,107	$373,672	$163,361
2,329)	(7,004)	(12,302)	(2,223)	(5,964)	(4,741)	(32,670)	(37,095)	(684)	(127,047)	(15,531)	(3,082)
5,228	218,013	339,563	173,138	310,153	225,579	1,069,987	1,919,083	36,983	6,868,060	358,141	160,279
3,583	28,735	45,264	3,436	14,582	9,920	90,748	92,149	2,107	387,662	36,556	7,495
6,544	423,058	661,005	37,387	247,936	202,974	1,712,445	1,533,769	26,525	4,925,866	534,542	128,137
747	911	1,434	109	462	314	2,876	2,920	67	12,284	1,158	238
6,102	670,717	1,047,266	214,070	573,133	438,787	2,876,056	3,547,921	65,682	12,193,872	930,397	296,149
4,732	5,766	9,084	689	2,926	1,991	18,209	18,490	423	77,787	7,335	1,504
0,834	676,483	1,056,350	214,759	576,059	440,778	2,894,265	3,566,411	66,105	12,271,659	937,732	297,653
		131,870			17,186	261,353	16,698			562,409	
0,834	$676,483	$1,188,220	$214,759	$576,059	$457,964	$3,155,618	$3,583,109	$66,105	$12,271,659	$1,500,141	$297,653

Schedule 2

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
Debenture Debt Charges
Year Ending December 31, 1989

SINKING FUND DEBENTURES

ISSUE NUMBER	BY-LAW NUMBER	RATE	MATURITY DATE	DEBT RETIREMENT	INTEREST	TOTAL
41	64	5.5	May 1, 1991	$ 56,428	$ 129,250	$ 185,678
47	75	7.5	Jul. 15, 1989-1994	8,454	149,224	157,678
48	78	9.5	Jan. 15, 1995		256,500	256,500
49	82	9.5	May 1, 1990		380,000	380,000
50	88	9.25	Oct. 1, 1995	62,857	277,500	340,357
53A	89	8.0	May 15, 1991	206,553	207,840	414,393
57B	93	7.75	Apr. 15, 1992	204,883	199,718	404,601
74B	114	9.5	Apr. 15, 1995	159,004	190,000	349,004
96	140	12.75	Oct. 15, 1989	142,027	601,520	743,547
97		9.0	Aug. 15, 1991	700,000	2,700,000	3,400,000
				1,540,206	5,091,552	6,631,758

SERIAL DEBENTURES

22	32	5.125	Jan. 1, 1989-2002	2,421	2,193	4,614
23	33	5.125	Jul. 1, 1989-2002	1,759	1,680	3,439
25	38	5.375	Oct. 1, 1989-2002	9,663	10,105	19,768
26	39	5.125	Jan. 1, 1989-2003	2,146	2,158	4,304
27	40	5.125	Jan. 1, 1989-2003	2,921	2,936	5,857
28	42	5.125	Jan. 1, 1989-2003	1,581	1,589	3,170
29	43	5.125	Jul. 1, 1989-2003	113,067	119,462	232,529
31	46	5.125	Jul. 1, 1989-2003	2,393	2,528	4,921
32	50	5.0-5.25	Jun. 15, 1989-1989	58,767	3,095	61,862
33	51	5.125	Jan. 1, 1989-2004	14,518	16,103	30,621
34	54	5.5	Nov. 16, 1989-1989	220,241	12,113	232,354
35	55	5.375	Jan. 1, 1989-2005	8,724	11,388	20,112
36	57	5.375	Jul. 1, 1989-1990	1,073	87	1,160
37	58	5.375	Jul. 1, 1989-1990	2,611	212	2,823
38	59	5.5	Jul. 2, 1989-1990	136,507	11,320	147,827
39	60	5.125	Jul. 1, 1989-2005	69,344	88,454	157,798
40	61	5.375	Dec. 1, 1989-2005	3,523	5,017	8,540
42	65	5.375	Jan. 1, 1989-2006	12,605	18,039	30,644
43	69	6.0	May 1, 1989-1992	160,041	34,456	194,497
44	70	5.375	Jan. 1, 1989-2007	25,477	39,833	65,310
45	71	6.125	Jan. 1, 1989-2007	922	1,769	2,691
46	72	6.0	Jul. 1, 1989-2007	1,537	2,983	4,520
51	90	6.875	Sep. 1, 1989-1990	9,289	1,101	10,390
			Carried Forward	861,130	388,621	1,249,751

Schedule 2
(Cont'd.)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
Debenture Debt Charges
Year Ending December 31, 1989

SERIAL DEBENTURES

ISSUE NUMBER	BY-LAW NUMBER	RATE	MATURITY DATE	DEBT RETIRFMENT	INTEREST	TOTAL
			Brought Forward	$ 861,130	$ 388,621	$1,249,751
52	91	6.875	Jan. 1, 1989-1991	7,592	952	8,544
54	94	7.875	Jan. 1, 1989-1992	36,340	9,476	45,816
55	94	8.25	Jan. 1, 1989-1992	31,483	8,641	40,124
56	94	8.25	Jan. 1, 1989-1992	28,395	7,794	36,189
58	103	6.875	Jan. 1, 1989-1992	120,163	24,527	144,690
59B	102	8.0	Feb. 15, 1989-1993	221,027	82,294	303,321
60B	104	8.25	Jul. 2, 1989-1993	288,531	123,430	411,961
61	106	7.25	Jan. 1, 1989-1993	39,481	13,012	52,493
62	106	7.25	Jan. 1, 1989-1993	35,985	11,860	47,845
63	106	7.5	Jan. 1, 1989-1993	28,874	9,888	38,762
64	106	6.875	Jan. 1, 1989-1993	302,128	87,109	389,237
65	108	7.875	Jan. 1, 1989-1993	47,044	17,030	64,074
66	108	8.25	Jan. 1, 1989-1993	31,856	12,162	44,018
67	108	7.5	Jan. 1, 1989-1993	24,640	8,438	33,078
68	109	7.875	Jan. 1, 1989-1993	166,305	60,203	226,508
69	108	7.5	Jul. 1, 1989-1993	21,376	8,367	29,743
70	108	7.625	Jul. 1, 1989-1993	53,674	21,414	75,088
71	110	7.875	Jan. 1, 1989-1994	38,942	18,356	57,298
72	110	7.5	Jan. 1, 1989-1994	35,894	15,974	51,868
73	110	7.5	Jan. 1, 1989-1994	155,018	68,991	224,009
75	115	7.5	Jan. 1, 1989-1995	89,386	49,650	139,036
76	115	7.5	Jan. 1, 1989-1995	32,295	17,938	50,233
77	115	7.5	Jan. 1, 1989-1995	117,276	65,142	182,418
78	115	7.625	Jan. 1, 1989-1995	144,324	81,794	226,118
79	117	7.5	Jul. 1, 1989-1995	227,453	139,248	366,701
80	117	7.0	Jul. 1, 1989-1995	60,328	33,940	94,268
81	117	7.625	Jan. 1, 1989-1996	146,975	101,189	248,164
82	117	8.0	Jan. 1, 1989-1996	133,995	98,041	232,036
83	117	10.0	Jan. 1, 1989-1996	3,590	3,519	7,109
84	117	10.375	Jan. 1, 1989-1996	3,112	3,206	6,318
85	118	9.5	May 5, 1989-1996	350,000	244,183	594,183
86	119	7.875	Jul. 1, 1989-1995	44,594	29,002	73,596
87	119	8.0	Jan. 1, 1989-1996	42,659	31,213	73,872
88	121	8.875-9.375	Nov. 1, 1989-1997	152,339	183,181	335,520
89	124	7.625	Jan. 1, 1989-1997	238,997	195,900	434,897
90	125	8.0-9.75-10.5	Jan. 1, 1989-1998	139,424	196,725	336,149
91	126	9.625-10.0	Jan. 1, 1989-1999	22,448	36,115	58,563
92	127	10.0	Jan. 1, 1989-2000	69,217	133,260	202,477
93	128	11.75-12.0-12.5	Sep. 15, 1989-2000	400,000	581,797	981,797
				4,994,290	3,223,582	8,217,872
				$6,534,496	$8,315,134	$14,849,630

Schedule 3

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Debt Charges
Year Ending December 31, 1989

1988 Actual	Debenture Debt	1989 Final Budget Debt Retirement	Interest	Total
$17,129,732	Greater Vancouver Sewerage & Drainage District Debenture Debt (Sch. 2)	$6,534,496	$ 8,315,134	$14,849,630
306,027	Premium on U.S. Funds	89,600	223,700	313,300
	Proposed debenture issues - new issues	236,648	6,537,050	6,773,698
	- refinancing temporary debenture issues	745,260	1,051,822	1,797,082
17,435,759		7,606,004	16,127,706	23,733,710
	Debt charges assumed re members' facilities			
9,018	City of Port Coquitlam	7,859	1,126	8,985
43,950	City of Langley		44,000	44,000
8,981,647	Interest on temporary capital borrowing		6,000,016	6,000,016
26,470,374	TOTAL DEBT CHARGES	7,613,863	22,172,848	29,786,711
	Less			
(155,604)	Interest on Mortgage		(140,307)	(140,307)
(2,465,190)	Interest charged to construction projects		(37,894)	(37,894)
(3,611,403)	Solid waste operations		(8,095,189)	(8,095,189)
(46,506)	Debt charges recovered from non-members			
$20,191,671	NET DEBT CHARGES	$7,613,863	$13,899,458	$21,513,321

Schedule 4

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Distribution of Interest
and Debt Retirement Charges
Year Ending December 31, 1989

1988 Actual		Requirements for the Year Ending December 31, 1989	(Underexpended) Overexpended in 1988	1989 Levy
	Sewerage Areas			
	Fraser			
$ 7,108,992	- General Facilities	$ 7,562,658	$ (286,695)	$ 7,275,963
936,185	- Maple Ridge/Pitt Meadows Facilities	935,201	(53,763)	881,438
803,501	Lulu Island West	914,467	(52,393)	862,074
	North Shore			
85,634	- Gleneagles Interceptor	99,716	(10,553)	89,163
742,488	- Other Facilities	756,940	(13,120)	743,820
7,343,168	Vancouver	7,937,052	(784,460)	7,152,592
	Drainage Areas			
501	Byrne Road	2,753	(26)	2,727
1,435	Kyle Street	7,034	(31)	7,003
4,479	Musqueam	4,479	(1)	4,478
5,174	Schoolhouse	10,832		10,832
(9)	University		(9)	(9)
	Still Creek-Brunette River			
232,660	- General	264,314	(18,074)	246,240
223,564	- Lower Brunette	249,770	101	249,871
593	William Street	5,939	(31)	5,908
	General			
83,642	Investigations, contribution to equipment fund, updating Rawn Report & construction facilities	181,159	(119,277)	61,882
26,774	Solid Waste Disposal Plan	37,562	(11,552)	26,010
725,255	Land Improvement Fund	960,372	1,143	961,515
18,324,036	Total Relative to District's Facilities	19,930,248	(1,348,741)	18,581,507
1,867,635	Financing for members under Section 7(2) (Schedule 5)	1,583,073	(53,887)	1,529,186
$20,191,671	TOTAL (Schedule 3)	$21,513,321	$(1,402,628)	$20,110,693

Burnaby	Coquitlam	Delta	Langley (City)	Langley (District)	Maple Ridge	New Westminster	N. Van. (City)	N. Van. (Dist.)	Pitt Meadows	Port Coquit
$1,609,536	$813,614	$ 857,073	$200,079	$361,965	$ 267,560	$488,918	$	$	$ 44,415	$300,
					754,050				127,388	
							194,459	303,728		
552,524										
2,721						6				
	3,281									
	5,279									
178,905	17,502					3,682				
						249,871				
	2,379									
6,919	2,469	2,905	604	1,470	1,034	1,477	1,799	2,835	215	
3,073	1,097	1,290				656	799	1,259		
107,508	38,356	45,138	9,391	22,843	16,063	22,947	27,960	44,043	3,343	14
$2,461,186	$883,977	$ 906,406	$210,074	$386,278	$1,038,707	$767,557	$225,017	$351,865	$175,361	$316,

Schedule 4

w West-minster	N. Van. (City)	N. Van. (Dist.)	Pitt Meadows	Port Coquitlam	Port Moody	Richmond	Surrey	U.E.L.	Vancouver	West Vancouver	White Rock
88,918	$	$	$ 44,415	$300,609	$205,664	$ 39,689	$1,858,181	$	$ 73,270	$	$155,390
			127,388								
						862,074					
	194,459	303,728								89,163 245,633	
						104,386		35,436	6,460,246		
6											
					3,722						
									4,478		
					5,553						
								(9)			
3,682 9,871					1,303				44,848		
					3,529						
1,477	1,799	2,835	215	913	621	5,683	5,771	132	24,277	2,289	469
656	799	1,259		406	276	2,524	2,563	59	10,783	1,017	208
2,947	27,960	44,043	3,343	14,189	9,652	88,301	89,663	2,049	377,205	35,570	7,294
7,557	$225,017	$351,865	$175,361	$316,117	$230,320	$1,102,657	$1,956,178	$37,667	$6,995,107	$373,672	$163,361

Schedule 5

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Distribution of Interest
and Debt Retirement Charges
For Financing Under Section 7(2)
Year Ending December 31, 1989

		Requirements for the Year Ending December 31, 1989	(Underexpended) Overexpended in 1988	1989 Levy
District of Burnaby	6	$ 120,182	$	$ 120,182
	7	132,940	(8,443)	124,497
	8	61,477	(7,146)	54,331
		314,599	(15,589)	299,010
District of Coquitlam	3	714		714
	4	40,558		40,558
	5	31,117	(2,255)	28,862
	6	57,756		57,756
	7	15,990		15,990
	8	15,715		15,715
	9	35,681		35,681
	10	45,384		45,384
		242,915	(2,255)	240,660
District of North Vancouver	1	14,669		14,669
	2	102,248	(199)	102,049
	3	23,187	(8,035)	15,152
		140,104	(8,234)	131,870
City of Port Moody	1	19,481	(2,295)	17,186
Township of Richmond	1	23,303	(2,530)	20,773
	2	18,825	(731)	18,094
	3	46,263		46,263
	4	95,213		95,213
	5	37,340		37,340
	6	43,670		43,670
		264,614	(3,261)	261,353
District of Surrey	1	18,884	(2,186)	16,698
District of West Vancouver	3	7,617		7,617
	4	23,634		23,634
	5	24,165		24,165
	6	11,811		11,811
	7	374,772	(20,067)	354,705
	8	140,477		140,477
		582,476	(20,067)	562,409
		$1,583,073	$(53,887)	$1,529,186

Schedule 6

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Administration
and General Expense Budget
Year Ending December 31, 1989

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Administration				
Allocated from Greater Vancouver Regional District				
- Administration offices	$ 213,200	$ $231,569	$ 275,500	$ 275,500
- General Administrative Services	251,500	291,376	328,000	406,200
- Central administrative services	59,100	59,100	55,100	55,100
Sewerage Area assessment database	14,071	13,283	11,311	11,311
Engineering administration	51,726	41,113	47,155	47,155
	589,597	636,441	717,066	795,266
General				
Travel time payout		95,550		
Legal	10,400	8,923	10,400	10,400
Audit	13,000	13,143	13,000	13,000
Travel	3,120		3,245	3,245
Miscellaneous	4,680	28,418	4,581	4,581
	31,200	146,034	31,226	31,226
TOTAL	$ 620,797	$ 782,475	$ 748,292	$ 826,492

Schedule 7

GREATER VANCOUVER SEWERAGE & DRAINAGE DISTRICT

Operation & Maintenance Budget
By Program
Year Ending December 31, 1989

	Sch	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Sewer Treatment Plants					
Annacis Island STP	8(a)	$ 2,887,715	$ 2,737,100	$ 3,122,057	$ 3,031,312
Northwest Langley STP		208,000	240,049	216,320	240,138
Iona Island STP	8(a)	3,730,891	3,454,017	3,862,831	3,878,963
Lions Gate STP	8(a)	1,025,574	964,632	1,066,478	1,066,478
Lulu Island STP	8(a)	1,010,921	1,070,086	1,095,088	1,095,088
Sub-total		8,863,101	8,465,884	9,362,774	9,311,979
Pumping Stations	8(b)	1,876,777	1,796,232	2,147,042	2,147,042
Trunks & Interceptors	8(c)	913,215	1,075,361	1,046,104	1,096,899
Drainage Facilities	8(d)	292,815	242,848	331,773	331,773
General Maintenance		314,559	311,860	318,664	318,664
Engineering	8(e)	261,256	275,286	262,170	262,170
Quality Control	8(f)	1,034,490	1,080,095	914,490	914,490
Source Control	8(g)	598,665	500,854	894,600	894,600
		$14,154,878	$13,748,420	$15,277,617	$15,277,617

Schedule 8

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Operation and Maintenance Budget
By Object of Expenditure
Year Ending December 31, 1989

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries, wages & employee benefits	$ 6,292,297	$ 6,090,394	$ 7,130,089	$ 7,203,785
Materials & supplies	1,606,501	1,653,505	1,522,116	1,484,016
Other services	216,700	206,080	231,547	231,747
Contracted services	208,000	240,144	216,320	240,138
Consultants	298,635	378,754	292,427	292,427
Vehicle & equipment rentals	478,155	702,052	619,514	645,014
Repairs & maintenance	156,468	423,013	248,862	248,862
Fuel oil & lubricants	361,520	233,927	319,687	319,687
Natural gas	190,528	90,964	119,109	119,109
Electricity	2,066,376	1,886,425	2,171,246	2,171,246
Chlorine & sulphur dioxide	263,640	271,841	274,186	274,186
Water	168,896	223,631	180,416	180,416
Telephone	47,004	42,577	50,058	50,058
Insurance	115,960	128,179	122,236	122,236
Janitor service	1,352	403	1,406	1,406
Land taxes & rentals	277,819	208,460	288,289	197,543
Provision for equipment replacement	33,450	42,241	40,700	40,700
Costs allocated				
Beach yard control system	172,576	162,579	172,576	172,576
Radio communications	52,648	50,491	52,648	52,648
Central Laboratory costs allocated	208,000	228,306	135,900	135,900
Indirect departmental costs	1,053,035	1,053,811	1,207,310	1,212,942
	14,269,560	14,317,777	15,396,642	15,396,642
Less: Recoveries	114,682	569,357	119,025	119,025
	$14,154,878	$13,748,420	$15,277,617	$15,277,617

Schedule 8(a)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Annacis Island Sewage Treatment Plant

Purpose/Level of Activity

The expenditures are associated with the treatment and disposal of primary sewage and sludge originating in Burnaby, Coquitlam, Delta, Langley City, Maple Ridge, New Westminster, Pitt Meadows, Port Coquitlam, Port Moody, Surrey, White Rock and a small portion of Vancouver and will also receive flow from East Richmond and Langley District early in 1989.

Allowances for materials and supplies and temporary summer help to operate and expand odour control facilities and upgrade existing facilities are included in the 1989 budget. An additional mechanic, who will be employed as part of the plant maintenance team, will be hired in 1989.

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries & employee benefits	$1,280,403	$1,142,419	$1,411,848	$1,411,848
Vehicles & equipment rentals	138,445	205,133	165,650	165,650
Natural gas	5,824	2,978	6,057	6,057
Electricity	338,000	317,472	351,520	351,520
Chlorine & sulphur dioxide	171,600	184,034	178,464	178,464
Water	61,880	72,741	61,880	61,880
Purchased repairs & maintenance	35,516	57,416	43,697	43,697
Parts, materials & supplies	471,880	443,504	496,093	496,093
Lubricants	35,776	16,525	30,426	30,426
Fuel oil	11,440	8,128	11,898	11,898
Other services	34,287	39,081	34,260	34,260
Insurance	23,920	28,678	26,300	26,300
Property taxes	87,256	280	90,746	
Telephone	9,000	4,723	9,000	9,000
Provision for equipment replacement	5,500	21,660	5,500	5,500
Indirect departmental costs allocated	176,988	192,328	198,718	198,718
	2,887,715	2,737,100	3,122,057	3,031,312
North-West Langley Sewage Treatment Plant	208,000	240,049	216,320	240,138
	$3,095,715	$2,977,149	$3,338,377	$3,271,450

Schedule 8(a)
(Continued)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Iona Island Sewage Treatment Plant

Purpose/Level of Activity

The expenditures are associated with the treatment and disposal of primary sewage and sludge originating in Vancouver, the University Endowment Lands, portions of Burnaby, Richmond (Twigg/Mitchell Islands), and Vancouver International Airport.

The plant also operates a septic-tank truck dumping facility that provides service for non-sewered residences and industry located in the Regional District. This service is provided at a fee such that the charges match the cost of operations and maintenance of the facility.

Temporary summer help will be employed to assist in odour control measures.

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Treatment Plant Operation				
Salaries & employee benefits	$ 716,666	$ 705,413	$ 798,413	$
Vehicle & equipment rentals	20,250	34,934	20,250	
Water	38,480	91,982	50,000	
Telephone		535		
Insurance	312	274	312	
Purchased repairs & maintenance		262		
Parts, materials & supplies	26,208	16,259	27,256	
Fuel oil	1,040		1,082	
Other services	780	1,650	811	
Electricity	572,000	461,718	594,880	
Provision for equipment replacement	11,500	5,302	11,500	
Indirect departmental costs allocated	96,327	109,613	100,988	
	1,483,563	1,427,942	1,605,492	1,605,492
Treatment Plant Maintenance				
Salaries & employee benefits	480,523	508,468	643,213	643,213
Vehicle & equipment rentals	49,930	133,751	113,427	113,427
Purchased repairs & maintenance	36,400	28,235	54,496	54,496
Parts, materials & supplies	449,183	333,116	431,076	332,276
Fuel oil	13,520	15,887	14,061	14,061
Lubricants	5,720	5,745	5,949	5,949
Other services	11,542	14,673	7,713	7,713
Provision for equipment replacement	750	4,323	4,000	4,000
Indirect departmental costs allocated	75,967	88,186	137,844	137,844
	1,123,535	1,132,384	1,411,779	1,312,979

(Continued)

Schedule 8(a)
(Continued)

GREATER VANCOUVER SEWERAGE & DRAINAGE DISTRICT

Iona Island Sewage Treatment Plant (continued)

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Power Plant Operation				
Salaries & employee benefits	$ 203,072	$ 249,423	$ 254,159	$
Vehicle & equipment rental		795		
Fuel oil	166,400	89,984	130,000	
Natural gas	156,000	56,454	83,200	
Lubricants	29,120	21,861	20,800	
Purchased repairs & maintenance	208		216	
Parts, materials & supplies	1,248	53,387	2,330	
Other services	1,144	4,786	3,190	
Indirect departmental costs allocated	28,095	37,330	33,038	
	585,287	514,020	526,933	526,933
Less: Recoveries	16,066	13,402	16,066	16,066
	569,221	500,618	510,867	510,867
Power Plant Maintenance				
Salaries & employee benefits	91,379	91,933	48,593	78,216
Vehicle & equipment rentals	1,400	2,892	1,420	1,420
Purchased repairs	25,272	25,179	30,410	30,410
Parts, materials & supplies	95,368	94,311	52,237	99,037
Other services	2,860	3,973	2,326	2,434
Indirect departmental costs allocated	12,213	14,398	6,398	10,124
	228,492	232,686	141,384	221,641
General				
Salaries & employee benefits	194,234	114,172	95,472	130,147
Vehicle & equipment rentals	11,800	9,753	11,800	11,800
Telephone	4,852	4,887	4,854	4,854
Insurance	28,912	34,909	32,600	32,600
Property taxes & land rentals	22,776	27,549	23,683	23,683
Materials & supplies	8,320	7,633	8,653	8,653
Other services	10,138	11,842	11,205	11,205
Purchased repairs & maintenance	1,456	1,796	2,080	2,080
Indirect departmental costs allocated	54,364	17,411	10,959	10,959
Provision for equipment replacement	1,500	910	1,500	1,500
	338,352	230,862	202,806	237,481
Less: Recoveries	12,272	70,475	9,497	9,497
	326,080	160,387	193,309	227,984
TOTAL	$3,730,891	$3,454,017	$3,862,831	$3,878,963

Schedule 8(a)
(Continued)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Lions Gate Sewage Treatment Plant

Purpose/Level of Activity

The expenditures are associated with the treatment and disposal of primary sewage and sludge originating in West Vancouver, and in the City and District of North Vancouver.

Temporary summer help will be employed to assist in odour control measures and assist in plant upgrading.

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries & employee benefits	$ 421,238	$ 372,112	$ 476,164	$
Vehicle & equipment rentals	35,900	18,654	26,600	
Water	31,200	22,328	31,200	
Natural gas	8,216	7,140	8,545	
Electricity	132,600	117,529	130,000	
Chlorine & sulphur dioxide	29,640	25,748	30,826	
Purchased repairs & maintenance	16,640	40,252	23,546	
Insurance	8,528	11,354	9,700	
Janitor service	1,352	403	1,406	
Lubricants	5,824	5,396	6,057	
Parts, materials & supplies	111,904	145,144	120,646	
Fuel oil	5,200	980	5,408	
Land rentals	93,775	78,154	93,775	
Telephone	3,052	3,659	3,054	
Other services	47,576	42,326	16,099	
Property tax	9,723	10,224	10,112	
Provision for equipment replacement	3,000	2,344	3,000	
Indirect departmental costs allocated	60,206	60,885	70,340	
	$1,025,574	$ 964,632	$1,066,478	$1,066,478

Schedule 8(a)
(Continued)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Lulu Island Sewage Treatment Plant

Purpose/Level of Activity

The expenditures are associated with the treatment and disposal of primary sewage and sludge originating in the West End of the Municipality.

Temporary summer help will be employed to assist in odour control measures.

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries & employee benefits	$ 407,207	$ 453,481	$ 463,227	$
Vehicle & equipment rentals	25,550	70,614	28,950	
Fuel oil	78,000	62,194	81,120	
Natural gas	18,200	22,150	18,928	
Electricity	128,440	115,053	133,578	
Chlorine & sulphur dioxide	62,400	62,059	64,896	
Water	24,232	25,833	24,232	
Purchased repairs	5,512	256,437	57,732	
Parts, materials & supplies	178,542	251,562	126,761	
Lubricants	1,768	2,074	3,120	
Insurance	6,032	7,346	6,900	
Telephone	5,500	4,653	5,500	
Other services	10,479	40,092	11,584	
Provision for equipment replacement	2,600	2,680	2,600	
Indirect departmental costs allocated	56,459	79,479	65,960	
	1,010,921	1,455,707	1,095,088	1,095,088
Less: Recoveries		385,621		
	$1,010,921	$1,070,086	$1,095,088	$1,095,088
TOTAL SEWAGE TREATMENT PLANTS	$8,863,101	$8,465,884	$9,362,774	$9,311,979

Schedule 8(b)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Pumping Stations

Purpose/Level of Activity

The transportation system includes 34 separate pumping stations ranging in size from stations of one or two low horsepower pumps serving a limited area to line stations housing multiple units of several hundred horsepower. The stations are in continuous automatic operation. Increased flow now requires that some pumping units must be replaced or upgraded. One new pump station was installed in 1988.

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries, wages & employee benefits	$ 614,333	$ 573,792	$ 749,733	$
Vehicle & equipment rentals	61,060	58,153	66,426	
Materials & supplies	113,776	97,974	115,656	
Other services	11,908	8,960	12,306	
Repairs & maintenance	17,836	8,009	18,670	
Fuel oil & lubricants	3,432	863	5,857	
Electricity	862,264	845,200	953,589	
Water	10,348	10,650	12,948	
Telephone	16,450	14,964	19,500	
Land taxes & rentals	2,586	4,893	2,660	
Indirect departmental costs	162,784	172,774	189,697	
	$1,876,777	$1,796,232	$2,147,042	$2,147,042

Schedule 8(c)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Trunks & Interceptors

Purpose/Level of Activity

The expenditures associated with inspecting, operating and maintaining the gravity sewers, control structures and forcemains in each of the four sewerage areas are collectively included in this category. Approximately 7½ miles of trunk sewers were added in 1988 to upgrade capacity and serve new areas.

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries, wages & employee benefits	$541,526	$ 583,518	$ 632,638	$ 642,038
Materials & supplies	52,988	84,785	40,639	54,539
Other services	13,830	14,284	17,147	17,347
Vehicle & equipment rentals	62,650	105,860	100,812	126,312
Repairs & maintenance	4,732	2,987	3,569	3,569
Fuel oil & lubricants	2,356	2,955	2,341	2,341
Electricity	30,160	26,541	3,869	3,869
Water	2,600			
Telephone	3,100	3,220	3,100	3,100
Land taxes & rentals	31,689	52,587	36,101	36,101
Indirect departmental costs	167,584	198,624	205,888	207,683
	$913,215	$1,075,361	$1,046,104	$1,096,899

Schedule 8(d)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Drainage Facilities

Purpose/Level of Activity

Cariboo Dam regulates the level of Burnaby Lake which receives flow from Still Creek and other drainage courses. The dam controls the rate of flow into the Brunette River. Routine maintenance consists of brush cutting, repairs to drainage channels, restoration of flood scour damage and the upkeep of structures designed to trap sediments and debris transported during flood flows. An increased level of maintenance will be undertaken in the Port Moody/Coquitlam Drainage Area as recommended in a study of the area completed last year.

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries, wages & employee benefits	$177,355	$138,283	$201,953	$
Materials & supplies	11,544	6,860	11,356	
Other services	3,844	3,215	7,156	
Vehicle & equipment rentals	35,050	25,893	37,850	
Repairs & maintenance	520		541	
Fuel oil & lubricants	780	358	811	
Natural gas	416			
Electricity	1,248	1,879	2,080	
Telephone	1,650	2,996	1,650	
Land taxes & rentals	7,328	14,730	7,618	
Indirect departmental costs	53,080	48,634	60,758	
	$292,815	$242,848	$331,773	$331,773

Schedule 8(e)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Engineering

Purpose/Level of Activity

The engineering program covers engineering investigations of a broad nature related to the operation and maintenance of the sewerage and drainage system. Activities include investigating requests and proposals from municipalities, regulatory agencies, developers and private individuals; sludge disposal methods and alternatives; environmental studies; rainfall analysis for design and operational purposes; computer applications and other improvements in operations and maintenance methods.

Activity will continue in 1989 on sludge disposal investigations for the four treatment plants, environmental studies on Sturgeon Bank for the Iona Island Treatment Plant, engineering investigations for the four sewerage areas, preventative maintenance programs, sewer corrosion investigations and repair methods, upgrading of rainfall and sewer gauging systems, and expansion of the computer-assisted drafting (CAD) system.

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries, wages & employee benefits	$117,561	$111,071	$126,623	$
Materials & supplies	6,968	15,692	7,193	
Other services	7,540	17,383	7,195	
Vehicle & equipment rentals	2,670	1,341	2,570	
Consultants	69,835	74,076	61,027	
Indirect departmental costs	56,682	55,723	57,562	
	$261,256	$275,286	$262,170	$262,170

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Quality Control Program

Purpose

The purpose of this program is to determine characteristics of treated and untreated sewage at each of the four primary plants in order to evaluate the effectiveness of treatment and to comply with the requirements of the Waste Management permits for monitoring of effluent discharges. In addition, this program provides monitoring data on receiving water quality and metropolitan bathing beaches; provides laboratory, technical and analytical resources for identifying and solving problems within the Districts' collection and treatment facilities; provides project management for environmental impact studies and provides laboratory support for the District's Source Control program.

Level of Activity

Daily testing for various chemical and physical characteristics are undertaken at each sewage treatment plant laboratory. In 1988, sewage treatment plant technicians carried out approximately 50,000 analyses on influent and effluent sewage, sludge and digester gas samples. In addition, main laboratory personnel performed approximately 13,000 analyses related to sewage treatment monitoring programs and source control activities. This level of service is expected to continue in 1989, with an increase in activity anticipated in the source control area. Technical and laboratory support will also be provided for special projects such as outfall monitoring studies and sludge disposal investigations.

The routine monitoring programs for receiving water and metropolitan bathing beaches in 1988 involved the collection and analysis of approximately 3,700 samples for fecal coliforms and related parameters. At the request of the Medical Health Officer, 20% of these samples were analyzed for the enterococci group of bacteria to help evaluate their usefulness as an indicator of water quality. Technical assistance and laboratory resources are provided to help identify specific problems, such as sporadic high fecal coliform results in the Deep Cove area. Over 400 extra samples were analyzed by the GVRD laboratory during 1988. A similar level of activity is anticipated in this program area in 1989.

During 1988, the Iona Deep Sea Outfall was put into operation. A number of programs were carried out to help assess the impact of the outfall on the receiving waters and to verify that the effluent plume is trapped below the saltwater/freshwater interface, as predicted by the 1983 Iona Deep Sea Outfall Feasibility Study. An extensive dilution and dispersion study was carried out in August of 1988. Due to the specialized nature of the monitoring required, the work was mostly carried out by consultants. Quality Control assisted with project management and provided laboratory and field staff for the project. To determine the necessity for chlorination at the Iona Treatment Plant, bathing beach monitoring was carried out from January to April of 1988. During this period, a total of 3000 samples were collected and analyzed for fecal coliform bacteria and related parameters. During 1989, it is anticipated that additional monitoring will be undertaken in the area of the Iona Deep Sea Outfall, however the details of the program have yet to be agreed upon with senior government agencies.

Schedule 8(f)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Quality Control

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries, wages & employee benefits	$ 435,382	$ 411,446	$ 401,414	$
Materials & supplies	36,816	67,413	29,844	
Other services	28,288	14,598	68,132	
Vehicle & equipment rentals	9,900	15,488	10,000	
Consultants	208,000	276,590	208,000	
Indirect departmental costs	316,104	294,560	197,100	
	$1,034,490	$1,080,095	$ 914,490	$ 914,490

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Source Control Program

Purpose

To provide for the maximum beneficial use of GVS&DD facilities by commercial and industrial dischargers consistent with the following requirements:

- Protection of health and safety of sewer workers and the general public.
- Prevention of the discharge to sewer of toxic substances which may pass through the treatment plant in concentrations in excess of permit maxima or which may result in treatment plant process upsets and/or environmentally unacceptable conditions in receiving waters.
- Protection of sewerage facilities from clogging, corrosion and explosion hazards.
- Protection of sewage treatment equipment and processes, and management of digested sludge quality to minimize disposal problems.

Activities or Level of Service

This program was implemented following the 1970 approval by the GVS & DD Administration Board of a set of regulations governing the admission of wastes into sewers. The District's ability to control industrial discharges to sewer was augmented in 1984 when the provincial government declared the Sewerage and Drainage District a Sewage Control Area under the Waste Management Act, which allowed the District to appoint a Sewage Control Manager.

The Pollution Control group carry out monitoring and enforcement services throughout the District, with priority for regulatory activity in the Fraser and Lulu Island West Sewerage Areas. The following activities are performed:

- Review applications for new industrial connections to District sewerage facilities, and provide advice to member communities regarding new connections to city and municipal sewer systems.
- Issue Orders under the Waste Management Act to regulate major non-domestic discharges.
- Investigate episodes related to abnormal sewage treatment plant influent quality.
- Prevent unauthorized dumping of waste to sewerage and drainage facilities.
- Maintain compliance with GVS&DD policy and regulations regarding the use of sewage treatment plant trucked waste disposal facilities.
- Monitor industrial discharges to sewer to ensure compliance with GVS&DD regulations and Waste Management Act Orders.

1989 Short Term Objectives

With the completion of Stage 1 of the Greater Vancouver Liquid Waste Management Plan in 1988, including the Source Control component, emphasis will be placed in 1989 on implementing the Stage 1 plan recommendation for effecting the control of sewer discharges at source.

These include:

1. Source Control Bylaw Development

The District will present a Source Control Bylaw to the Water & Waste Management Committee and the GVS&DD Board in 1989. Its development began in 1988 with a review of District goals and policies for enforcement. Establishment of discharge criteria and progress toward member municipality review of a draft Bylaw and implementation agreement began in 1988 and will be completed in early 1989. Additional resources for Source Control will be needed to implement the Bylaw and provide supplementary enforcement and laboratory support. The 1989 budget provides $229,100 for these purposes, but the exact cost will depend on the implementation date of the new Bylaw.

2. Source Control Enforcement

The Source Control Bylaw will form the basis for increased enforcement activity. Upon implementation, Pollution Control's enforcement strategy in 1989 will emphasize adherence to Bylaw requirements in addition to characterization of effluent quality.

Review of Prior Year's Objectives

Program activities in 1988 focussed on the issuance of Source Control Orders to various industries, particularly the metal finishing and plating sector. Over 60 such Orders had been issued by the end of 1988. Requirements included the establishment of programs at individual plants for monitoring sewer discharge quality and volume to provide a basis for possible further control action when the Source Control Bylaw is enacted. The existing GVS&DD Regulations for such discharges were considered interim objectives in these Orders. Generally, the volume of Source Control activities listed above increased significantly in 1988

Schedule 8(g)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Source Control

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries, wages & employee benefits	$394,711	$347,072	$597,200	$
Materials & supplies	104	1,961	4,000	
Other services	39,416	15,128	47,800	
Vehicle & equipment rentals		90	10,000	
Indirect departmental costs	143,634	117,429	210,800	
Equipment replacement provision			4,000	
Consultants	20,800	19,174	20,800	
	$598,665	$500,854	$894,600	$894,600

Schedule 9

Schedule 9

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Distribution of
Operation & Maintenance Expenses
Year Ending December 31, 1989

1988 Actual		Provisional Requirements for the Year Ending December 31, 1989	Provisional (Underexpended) Overexpended in 1988	1989 Levy
	Sewerage Areas			
$ 5,059,828	Fraser	$ 5,867,617	$ (74,326)	$5,793,291
1,396,150	Lulu Island West	1,555,663	(2,545)	1,553,118
1,471,667	North Shore	1,673,459	(119,931)	1,553,528
4,978,639	Vancouver	5,241,874	(150,335)	5,091,539
	Drainage Areas			
13,525	Byrne Road	13,767	2,430	16,197
18,367	Kyle Street	23,879	2,241	26,120
5,480	Schoolhouse Creek	19,885	(6,873)	13,012
209,712	Still Creek-Brunette River	261,539	(38,426)	223,113
16	University	843	(783)	60
9,273	William Street	25,626	(6,125)	19,501
	General			
238,215	Pollution Monitoring	261,412	(31,814)	229,598
347,548	Miscellaneous	332,053	20,029	352,082
$13,748,420		$15,277,617	$(406,458)	$14,871,159

Burnaby	Coquitlam	Delta	Langley (City)	Langley (District)	Maple Ridge	New West-minster	N. Van. (City)	N. Van. (Dist.)	Pitt Meadows	Port Coquitlam	P Mo
$1,281,550	$647,819	$682,422	$159,307	$288,205	$213,037	$389,288	$	$	$35,364	$239,352	$16
							406,143	634,361			
393,312											
16,159						38					
	12,239										
	6,341										
162,102	15,858					3,336					
	7,854										
25,672	9,159	10,778	2,242	5,455	3,836	5,479	6,676	10,517	798	3,388	
39,366	14,045	16,528	3,439	8,364	5,882	8,403	10,239	16,127	1,225	5,196	
$1,918,161	$713,315	$709,728	$164,988	$302,024	$222,755	$406,544	$423,058	$661,005	$37,387	$247,936	$2

Schedule 9

	New Westminster	N. Van. (City)	N. Van. (Dist.)	Pitt Meadows	Port Coquitlam	Port Moody	Richmond	Surrey	U.E.L.	Vancouver	West Vancouver	White Rock
037	$389,288	$	$	$35,364	$239,352	$163,754	$ 31,601	$1,479,527	$	$ 58,340	$	$123,725
							1,553,118					
		406,143	634,361								513,024	
							74,307		25,224	4,598,696		
	38											
						13,881						
						6,671						
	3,336					1,181				40,636		
									60			
						11,647						
836	5,479	6,676	10,517	798	3,388	2,305	21,085	21,411	490	90,072	8,494	1,741
882	8,403	10,239	16,127	1,225	5,196	3,535	32,334	32,831	751	138,122	13,024	2,671
755	$406,544	$423,058	$661,005	$37,387	$247,936	$202,974	$1,712,445	$1,533,769	$26,525	$4,925,866	$534,542	$128,137

Schedule 10

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Operation and Maintenance Budget
Year Ending December 31, 1989

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Fraser Sewerage Area				
Annacis Is. Sewage Treatment Plant	$2,887,715	$2,737,100	$3,122,057	$3,031,312
Annacis Is. laboratory	99,175	83,504	103,745	103,745
Interceptors & trunk sewers	426,806	573,861	695,471	746,271
Pumping stations	1,163,834	1,103,505	1,253,085	1,253,085
Engineering	81,931	86,320	88,752	88,752
Sludge disposal investigations	15,500	16,838	16,314	16,314
Sewer use control	251,193	218,651	388,000	388,000
	4,926,154	4,819,779	5,667,424	5,627,479
North-West Langley Sewage Treatment Plant	208,000	240,049	216,320	240,138
	5,134,154	5,059,828	5,883,744	5,867,617
Lulu Island West Sewerage Area				
Lulu Is. Sewage Treatment Plant	1,010,921	1,070,086	1,095,088	
Lulu Is. laboratory	101,441	87,176	96,557	
Trunk sewers	9,628	4,945	11,785	
Pumping stations	78,992	66,488	87,169	
Engineering	6,414	9,439	6,842	
Sludge disposal investigations	21,460	15,119	22,522	
Sewer use control	169,839	142,897	235,700	
	1,398,695	1,396,150	1,555,663	1,555,663
North Shore Sewerage Area				
Lions Gate Sewage Treatment Plant	1,025,574	964,632	1,066,478	
Lions Gate laboratory	98,050	78,852	100,866	
Pumping Stations	98,125	128,845	252,129	
Interceptors	244,082	200,978	112,364	
Engineering	10,545	11,681	11,150	
Sludge disposal investigations	23,549	16,114	23,572	
Sewer use control	91,673	70,565	106,900	
	1,591,598	1,471,667	1,673,459	1,673,459
Vancouver Sewerage Area				
Iona Is. Sewage Treatment Plant	3,730,891	3,454,017	3,862,831	3,878,958
Iona Is. outfall, channel, jetty, roads & wharves	22,915	11,053	23,868	23,868
Iona Is. laboratory	119,490	111,778	120,591	120,591
Investigation of pollution of Sturgeon Bank	13,039	13,039		
Pumping stations	524,732	483,869	540,895	540,895
Interceptors & trunk sewers	232,697	295,577	226,485	226,485
Engineering	29,396	39,586	31,003	31,003
Sludge Disposal Investigations	23,547	20,409	24,755	24,755
Sewer use control	85,960	68,741	164,000	164,000
Deep Sea Outfall Monitoring	346,307	480,570	231,319	231,319
	5,128,974	4,978,639	5,225,747	5,241,874

Schedule 10
(Continued)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Operation and Maintenance Budget
Year Ending December 31, 1989

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Byrne Road Drainage Area				
Willard St. Pumping Station	11,095	13,525	13,767	13,767
Kyle Street Drainage Area				
Trunk drain	16,126	18,367	23,879	23,879
Schoolhouse Creek Drainage Area				
Schoolhouse Creek	12,353	5,480	19,885	19,885
Still Creek - Brunette River Drainage Area				
Brunette River & Burnaby Lake	103,771	102,688	109,883	
Stoney Creek	34,199	27,590	35,837	
Still Creek	94,508	69,510	99,368	
Lozells Creek	15,660	9,924	16,451	
	248,138	209,712	261,539	261,539
University Drainage Area				
Shaft & tunnel	799	16	843	843
William Street Drainage Area				
Trunk drain	15,398	9,273	25,626	25,626
Pollution Monitoring	270,029	238,215	261,412	261,412
Miscellaneous				
Rain, sewer & stream gauges	102,295	134,478	106,824	
Radio communications	52,648	50,491	52,648	
Beach yard control system	172,576	162,579	172,581	
	327,519	347,548	332,053	332,053
TOTAL	$14,154,878	$13,748,420	$15,277,617	$15,277,617

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

SOLID WASTE FUNCTION

Long Term and Changing Role

The Greater Vancouver Sewerage and Drainage District establishes and operates facilities for disposal of municipal solid waste. Under an amendment of the Greater Vancouver Sewerage and Drainage District Act in 1974, (Section 7A of the Act) the District is given the authority to establish and operate facilities for disposal of wastes of all types, but at the present time has only become involved in the disposal of municipal-type wastes. An amendment of the Waste Management Act in 1982 encourages areas having common problems of waste disposal to establish Waste Management Plans to properly manage the disposal of their liquid and solid wastes.

Following several years of study on how to best manage the disposal of solid wastes generated in the Region, in December 1985 the Greater Vancouver Regional Solid Waste Management Plan was approved by the Minister of Environment. The Plan incorporates two landfills (both municipally owned and operated) and provides for the establishment of recycling plants, waste transfer stations, an incinerator with energy recovery, and prior-to-collection recycling programs to reduce to the practical minimum the quantity of wastes to be disposed of to landfills. As a supplement to the Plan, by separate agreements, the District has undertaken to provide waste disposal to municipalities outside the boundaries of the Regional District, viz., Pitt Meadows, Maple Ridge, City of Langley, Township of Langley, Matsqui and Abbotsford, to a landfill which is to be established at Cache Creek.

The long-term and ongoing role of the District solid waste function is to provide environmentally sound and cost effective waste disposal services in accordance with the Waste Management Act and the Greater Vancouver Sewerage and Drainage District Act.

1989 Short Term Objectives

From 1988 -

- Complete facilities for the Cache Creek Landfill, viz., landfill infrastructure at Cache Creek, Matsqui Transfer Station and waste transfer stations in Township of Langley and Maple Ridge for receipt of resident-delivered waste.

- Expand facilities to reduce the volume of wood waste going to landfills and being burned (ongoing).

- Continue with studies, re fly and bottom ash utilization and disposal (ongoing).

- Select a qualified consultant to develop a strategic recycling Plan for the Region. The need for this study became apparent, in part, because of the high costs recently tendered for the proposed glass depot project.

- Establish the Surrey Residential Waste Transfer Station.

- In cooperation with the Ministry of Environment and others, continue with the study to find a long-term solution for the disposal of broken pavement, demolition and land clearing wastes produced in the Region.

New for 1989

- Establish, or foster the establishment by others, of a program for managing the disposal of special wastes generated by homeowners and small quantity generators of special wastes.

- Establish, or foster the establishment by others, of a program to provide for disposal in an environmentally satisfactory way of biomedical wastes generated in the Region.

- Commence the establishment of a source control program to control the types of waste disposed of to the municipal waste system.

- Establish, or foster the establishment by others, of programs to deal with problem wastes, viz., asbestos, dead animals, inert industrial sludges, etc.

- Establish a turbo-generator or other energy utilization system to use the steam produced by the Burnaby Incinerator in excess of that which can be used by Paperboard Industries.

- Establish a program for recovery and utilization of gas from the Coquitlam Landfill.

1989 Capital Program

The 1989 Capital Program includes work carried over from 1988, viz., completion of minor deficiencies at the Burnaby RIP, and construction of the Surrey Residential Transfer Station (RTS) and new works planned for 1989, notably, a turbo-generator and switch gear for utilization of the excess steam produced at the Burnaby Incinerator, a gas collection system at Coquitlam Landfill, and miscellaneous solid waste studies. The District could undertake new waste disposal responsibilities, depending on the findings of the studies and the Board's decision as to the role to be played by the District. Examples of new responsibilities which might be undertaken include: provision of a system for receiving and disposing of special wastes generated by homeowners, provision of an environmentally safe biomedical waste disposal system, programs to deal with problem wastes such as asbestos, dead animals, batteries, etc.

Research and Development

The 1988 Solid Waste budget recognized the need for a budget to cover the costs of research and development for waste disposal problems of a general nature which are referred to the District for resolution, viz., biomedical waste study, disposal of household hazardous waste, disposal of gypsum waste, new technology acquisition, etc. All of the aforesaid issues are of regional interest and benefit, and accordingly the costs incurred in respect of them should be borne by all members of the District. As for 1988, a budget of $50,000 has been provided to cover the cost of like activities in 1989.

Regional Rate

The Regional Rate for waste disposal reflects all of the costs for operation of facilities, equipment replacement and debt retirement for all District facilities, including the like costs for the District's share of usage of facilities operated under the Plan by Vancouver and Surrey, less income from sale of energy and rents. Thus, the Regional rate does not reflect the cost to receive, handle and dispose of waste via a particular facility, but rather the average cost of providing and operating all facilities.

The Regional rate for 1989 is $43.50/tonne. In the 1988 budget it was anticipated that the 1989 Regional rate would be about $40/tonne. All rates presented in the 1988 budget were in terms of 1988 dollars, thus allowing 4 percent for inflation, the aforesaid rate of $40/tonne becomes $41.60 in terms of 1989 dollars.

The 1989 rate of $43.50/tonne reflects slightly higher costs than initially expected on some small items (internal waste transfer and ash disposal) but the main item contributing to the rate increase is the reduction of expected revenues from sale and utilization of steam produced by the Burnaby Incinerator. In order to maximize this revenue stream, the District is working closely with Paperboard Industries. Also, District staff have undertaken discussions with B.C. Hydro and Power Authority to explore power generation from the excess steam. Looking ahead to future years, if the rate of borrowing averages at 10 percent per annum, if inflation is 4 percent per annum and if energy rates do not decline from their present level, the actual rates in both 1990 and 1991 (as opposed to rates at a 1989 dollars base) are preliminarily estimated to be $46/tonne.

Schedule 11

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Revenue & Expenditure Budget
Solid Waste Disposal
By Program
Year Ending December 31, 1989

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Revenue				
User charges	$18,643,000	$17,817,422	$29,893,500	$29,893,500
Steam sales	2,350,000	1,100,000	2,450,000	2,450,000
Rental revenue	142,000	117,240	106,500	106,500
Balance from previous year	1,187,700	1,187,700	(135,107)	758,514
	22,322,700	20,222,362	$32,314,893	$33,208,514
Expenditures				
Refuse incinerator				
Operating costs	6,228,570	4,107,074	$ 8,247,604	$ 8,247,604
Debt charges	3,369,334	3,103,132	6,308,146	7,090,905
	9,597,904	7,210,206	14,555,750	15,338,509
Resource recovery, transfer & landfill operations				
Operating costs	11,552,497	11,441,056	16,227,102	16,227,102
Debt charges	890,835	508,271	893,421	1,004,283
	12,443,332	11,949,327	17,120,523	17,231,385
Administration	313,520	304,315	638,620	638,620
Total Expenditure	22,354,756	19,463,848	$32,314,893	$33,208,514
Surplus carried to following year	$ (32,056)	$ 758,514		

Schedule 12

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Revenue & Expenditure Budget
Solid Waste Disposal
By Object of Expenditure
Year Ending December 31, 1989

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries & employee benefits	$ 302,221	$ 248,524	$ 381,990	$
Contract services	15,666,000	13,189,121	20,777,200	
Royalties	241,000	238,365	345,800	
Board vehicles & mileage	9,200	7,595	25,500	
Consultants	47,500	61,772	136,000	
Other services & supplies	414,570	523,132	969,000	
Net amount payable to District of North Vancouver re North Shore Baling Station	142,796	118,885		
Central administrative services allocated	10,800	28,235	89,500	
Indirect departmental costs	128,600	135,743	211,335	
Provision for equipment replacement	75,000	218,851	686,000	
Port Mann landfill	964,000	963,954	1,275,000	
Air pollution monitoring	92,900	118,268	216,000	
	18,094,587	15,852,445	25,113,325	25,113,325
Debt charges	4,260,169	3,611,403	7,201,568	8,095,189
	$22,354,756	$19,463,848	$32,314,893	$33,208,514

Schedule 13(a)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Plan Management & Administration
Revenue & Expenditure Budget
Year Ending December 31, 1989

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries & employee benefits	$211,520	$155,279	$345,120	$
Board vehicles & mileage		1,158		
Consultants		36,269		
Other services & supplies	10,000	12,561		
Central administrative services allocated		13,423	89,500	
Indirect departmental costs	92,000	85,625	204,000	
	$313,520	$304,315	$638,620	$638,620

Schedule 13(b)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Refuse Incinerator
Summary by Object of Expenditure
Revenue & Expenditure Budget
Year Ending December 31, 1989

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries & employee benefits	$ 5,670	$	$ 9,104	$
Contract services	5,795,000	3,638,845	7,220,000	
Royalties		61,179	80,000	
Board vehicles & mileage		811	2,000	
Consultants	25,000	1,248	100,000	
Other services & supplies	310,000	290,991	620,500	
Air pollution monitoring	92,900	114,000	216,000	
	6,228,570	4,107,074	8,247,604	8,247,604
Debt charges	3,369,334	3,103,132	6,308,146	7,090,905
	$9,597,904	$7,210,206	$14,555,750	$15,338,509

Schedule 13(c)

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Resource Recovery, Transfer & Landfill Operations
Summary by Object of Expenditure
Revenue & Expenditure Budget
Year Ending December 31, 1989

	1988 Final Budget	1988 Actual	1989 Provisional Budget	1989 Final Budget
Salaries & employee benfits	$ 85,031	$ 90,332	$ 27,765	$
Contract services	9,871,000	9,550,275	13,557,200	
Royalties	241,000	177,186	265,800	
Board vehicles & mileage	9,200	5,626	23,500	
Consultants	22,500	24,255	36,000	
Other services & supplies	94,570	230,019	348,500	
Net amount payable to District of North Vancouver re Baling Station	142,796	118,885		
Central administrative services allocated	10,800	11,811		
Indirect departmental costs	36,600	49,862	7,337	
Provision for equipment replacement	75,000	218,851	686,000	
Port Mann landfill	964,000	963,954	1,275,000	
	11,552,497	11,441,056	16,227,102	16,227,102
Debt charges	890,835	508,271	893,421	1,004,283
	$12,443,332	$11,949,327	$17,120,523	$17,231,385

Schedule 14

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Assessed Values Taxable by Rate for
Regional Hospital District Purposes for 1988

	1987 Total	1988 Total	%
Vancouver Sewerage Area			
Burnaby	$ 278,926,038	$ 288,546,408	7.72481
Richmond	53,535,294	54,514,159	1.45942
University Endowment Lands	18,493,093	18,505,179	.49542
Vancouver	3,329,149,255	3,373,750,829	90.32035
	$3,680,103,680	$3,735,316,575	100.00000
Fraser Sewerage Area			
General Facilities			
Burnaby	$ 665,400,356	$ 681,862,042	22.12128
Coquitlam	327,949,212	344,678,633	11.18222
Delta	352,877,713	363,089,702	11.77952
Langley (City)	81,281,094	84,761,101	2.74986
Langley (District)	145,728,959	153,342,313	4.97480
Maple Ridge	110,984,781	113,348,877	3.67731
New Westminster	205,355,241	207,125,028	6.71964
Pitt Meadows	18,587,938	18,815,791	.61043
Port Coquitlam	120,420,591	127,349,787	4.13154
Port Moody	77,880,768	87,127,241	2.82662
Richmond	16,817,766	16,813,690	.54548
Surrey	743,519,482	787,197,676	25.53862
Vancouver	33,025,589	31,040,209	1.00702
White Rock	63,127,997	65,829,097	2.13566
	$2,962,957,487	$3,082,381,187	100.00000
Maple Ridge/Pitt Meadows Facilities			
Maple Ridge	$ 110,984,781	$ 113,348,877	85.76337
Pitt Meadows	18,587,938	18,815,791	14.23663
	$ 129,572,719	$ 132,164,668	100.00000
North Shore Sewerage Area			
North Vancouver - City	$ 256,488,838	$ 252,375,690	26.14328
North Vancouver - District	394,549,031	394,189,321	40.83358
West Vancouver	310,115,462	318,790,865	33.02314
	$ 961,153,331	$ 965,355,876	100.00000
Lulu Island West Sewerage Area			
Richmond			100.00000
Still Creek-Brunette River Drainage Area			
Burnaby	$ 594,093,737	$ 631,349,483	72.65458
Coquitlam	61,919,501	61,763,425	7.10763
New Westminster	13,019,781	12,993,580	1.49527
Port Moody	4,594,407	4,599,360	.52929
Vancouver	157,686,243	158,268,272	18.21323
	$ 831,313,669	$ 868,974,120	100.00000

Schedule 14
Continued

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Assessed Values Taxable by Rate for
Regional Hospital District Purposes for 1988

	1987 Total	1988 Total	%
Byrne Road Drainage Area			
Burnaby	$ 189,720,069	$ 194,474,914	99.76547
New Westminster	450,655	457,170	.23453
	$ 190,170,724	$ 194,932,084	100.00000
Kyle Street Drainage Area			
Coquitlam	$ 5,944,838	$ 5,937,021	46.85715
Port Moody	7,035,817	6,733,450	53.14285
	$ 12,980,655	$ 12,670,471	100.00000
William Street Drainage Area			
Coquitlam	$ 4,447,824	$ 4,451,587	40.27535
Port Moody	6,485,136	6,601,296	59.72465
	$ 10,932,960	$ 11,052,883	100.00000
University Drainage Area			
University Endowment Lands			100.00000
Schoolhouse Creek Drainage Area			
Coquitlam	$ 13,428,915	$ 13,572,795	48.73134
Port Moody	14,616,022	14,279,494	51.26866
	$ 28,044,937	$ 27,852,289	100.00000
U.E.L. South Musqueam Drainage Area			
Vancouver			100.00000
Lower Mainland Solid Waste Disposal Plan			
Burnaby	$ 944,326,394	$ 970,408,450	11.81572
Coquitlam	329,328,494	346,216,822	4.21555
Delta	402,162,082	407,427,941	4.96086
New Westminster	205,355,241	207,125,028	2.52196
North Vancouver (City)	256,488,838	252,375,690	3.07293
North Vancouver (District)	397,896,089	397,544,879	4.84052
Port Coquitlam	121,099,055	128,072,557	1.55942
Port Moody	77,880,768	87,127,241	1.06086
Richmond	767,424,854	797,031,132	9.70468
Surrey	766,710,336	809,334,170	9.85448
University Endowment Lands	18,493,093	18,505,179	.22532
Vancouver	3,362,174,843	3,404,791,038	41.45683
West Vancouver	312,372,308	321,067,751	3.90933
White Rock	62,519,773	65,829,097	.80154
	$8,024,232,168	$8,212,856,975	100.00000

Schedule 14
Continued

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT

Assessed Values Taxable by Rate for
Regional Hospital District Purposes for 1988

	1987 Total	1988 Total	%
Total Assessed Values			
Burnaby	$ 944,326,394	$ 970,408,450	11.18113
Coquitlam	329,328,494	346,216,822	3.98914
Delta	402,162,082	407,427,941	4.69442
Langley (City)	81,281,094	84,761,101	.97662
Langley (District)	196,947,389	206,195,444	2.37580
Maple Ridge	138,559,525	144,995,506	1.67065
New Westminster	205,355,241	207,125,028	2.38651
North Vancouver (City)	256,488,838	252,375,690	2.90789
North Vancouver (District)	397,896,089	397,544,879	4.58055
Pitt Meadows	29,181,394	30,177,344	.34771
Port Coquitlam	120,862,226	128,072,557	1.47566
Port Moody	77,880,768	87,127,241	1.00389
Richmond	767,424,854	797,031,132	9.18346
Surrey	762,407,747	809,334,170	9.32522
University Endowment Lands	18,493,093	18,505,179	.21322
Vancouver	3,362,174,843	3,404,791,038	39.23027
West Vancouver	312,372,308	321,067,751	3.69937
White Rock	62,519,773	65,829,097	.75849
	$8,465,662,152	$8,678,986,370	100.00000